

IN THE  
UNITED STATES PATENT & TRADEMARK OFFICE

IN RE APPLICATION OF: CALLINAN et al.	)	Art Unit: 3673
CASE: 1423-9	)	
SERIAL NO.: 09/428,508	)	Examiner: F. Lagman
FILED ON: October 27, 1999	)	
FOR: RETAINING WALL SYSTEM	)	COVER SHEET FOR
	)	"VERSION WITH MARKINGS
	)	TO SHOW CHANGES
	)	MADE"IN ACCORDANCE
	)	WITH 37 CFR 1.121

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behind the front wall.

It would be advantageous if at least preferred embodiments of the present invention provided a retaining wall and a method for forming the same that improves upon, or at least provides a useful alternative to, the retaining walls formed from tyres that exist in the prior art.

#### SUMMARY OF THE INVENTION

In a first aspect, the present invention provides a retaining wall for retaining an embankment or similar including a plurality of tyres arranged in a plurality of courses adjacent to the embankment and such that a central axis of each tyre is offset from vertical.

An advantage of such a construction is that a sloping embankment can be formed which then provides additional support to the retaining wall, and additional strength.

Typically, each tyre's central axis is offset from vertical at a batter angle ranging from 10° to 20°. Use of this angle has been observed in practice to provide ease of construction of the retaining wall whilst still retaining the advantages of the inclination of the wall.

Adjacent courses can be separated by a fill material, optionally by a distance that is half a tyre in diameter. Alternatively, adjacent courses can abut. Each tyre can at least partially (but typically completely) be filled with a fill material, and further fill material can be used to fill gaps between the tyres, and between the tyres and the embankment.

Typical fill materials include concrete (for example at the lowest course of tyres and at intermittent courses (eg. every alternating course) in the tyre wall construction). Granular or particulate, optionally free draining materials, can also be employed, for example, such as cobble, sand and/or shredded tyre. The use of shredded tyre further assists in the disposal of additional discarded tyres and is thus environmentally advantageous.

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plurality of conveyor belt sections. Both the tread sections and side wall sections can be cut from additional tyres, and the conveyor sections can be cut from a single conveyor belt. The sections can then be joined together to  
5 define the reinforcing section.

Preferably the sections are joined to define a grid formation, which thereby replaces the existing geogrids used in the prior art. It should be appreciated that prior art geogrids are typically formed from woven and non-woven  
10 textiles, optionally reinforced with polymer; or from polymeric fibres. Such geogrids and reinforcing materials tend to be very expensive, whereas the use of tyres and conveyor belts is both environmentally and economically advantageous and, again, is a simpler option.

15 In the grid formation, individual sections can be attached or linked to and/or threaded through adjacent sections to define the grid formation.

Also, a reinforcing section can be provided for each course and is typically arranged to extend generally  
20 horizontally or to be inclined downwardly into the wall.

Each plurality of courses typically defines a "row". Accordingly, in an alternative construction, a plurality of rows of tyres can be arranged adjacent to the embankment.

In a fourth aspect, the present invention also  
25 provides a method for forming a retaining wall for retaining an embankment or similar including the steps of:

- (a) forming a base for the retaining wall adjacent to the embankment and that slopes downwardly to the embankment from surrounding ground; and  
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- (b) arranging a plurality of tyres in a plurality of courses adjacent to the embankment and along the base.

As above, the batter angle of the so-formed wall typically ranges from 10° to 20° offset from the vertical.

35 Typically, a course of tyres is laid and each tyre is then at least partially (preferably completely) in-filled